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OCT 27 2004

INDIANA DEPARTMENT OF
ENVIRONMENTAL MANAGEMENT
NORTHWEST REGIONAL OFFICE

LAKE

BP Products North America Inc.
Whiting Business Unit
2815 Indianapolis Blvd.
PO Box 710
Whiting, IN 46394-0710

October 26, 2004

Mr. Michael Kuss
Indiana Department of Environmental Management
Northwest Regional Office
8315 Virginia Street, Suite 1
Merrillville, Indiana 46410-9201

RE: NPDES Permit No. IN0000108 Inspection Summary/Violation Letter

On September 28, 2004 BP Whiting received a letter from your office requesting a written detailed explanation documenting compliance in response to the allegation of potential violations observed during an inspection of our NPDES permitted facility on June 2, 2004.

Effluent Limit

BP reported excedences of the daily maximum TSS limits on November 22, 2002, January 21, 2003, January 22, 2003 and the January 2003 monthly limit. Attached are letters sent to Mr. Greg Glover Indiana Department of Environmental management dated November 27, 2002, January 27, 2003 and February 28, 2003 discussing these incidents and providing relevant information. As discussed in these letters, in response to these issues BP immediately implemented corrective and preventative measures including

- Initiating water shedding to include reductions in flow by impounding water.
- Requesting tank 917 impounds temporarily to significantly reduce flows.
- Monitoring clarifiers and adjusting flows appropriately to minimize the TSS on the clarifier effluent and using clarifier chemicals to drive the sludge blankets down.
- Manually backwashing filters more frequently to improve effluent water quality.
- Using recycled or treated effluent for cooling tower make-up.
- Limiting unit draining to only that necessary for safe operations.
- Communicating to the facility the need to minimize flows that can affect the plant.
- Assigned a single point of accountability to the plant that focuses on reliability and improved performance.

Also attached is the returned correspondence letter from Mr. Glover dated February 10, 2003 and March 10, 2003 identifying an adequate response to these issues.

Beyond those actions included in our earlier letter we have continued to make improvements to the permitted facility. Over five million dollars of additional improvements have been made or are in progress, including the following:

- Final filter upgrades to improve performance continues through mid 2005.
- Converting the Air Floatation Unit (AFU) process boxes to composite materials for improved reliability in the DAF. 4 of the 7 boxes have been completed with the remaining slated for 2005.
- A conversion of the instrumentation on the AFU air saturation system to a modern distributed control system which will improve aeration and trouble shooting. This project is 90% complete, and is expected to finish mid 2005.
- Upgrades to the Barscreen are expected to be complete by January 1, 2005 that will improve reliability and performance while effectively removing solids upfront.
- Improvements to the aeration capacity with new gearboxes and channelaire submersible aerators have been installed as part of the upgrades. This work is to be completed in 2005.

Additional work has been done upstream of the permitted facility to improve the quality or reduce the quality of material received. These activities include:

- API Separator cleaning in the Refinery plant such as tank 8 and D118 at 11 Pipestill and the 500 Cat complex separators has helped to minimize impact to the Lakefront.
- Installation of a Tail Gas Unit (TGU) filter press, at the Sulfur recovery unit.
- A sewer cleaning project in the main refinery continues to minimize the solids loading to the WWTP. This effort is ongoing.

These and other activities around identifying ways to improve the reliability of the unit performance are actions taken that help eliminate potential upsets. We will continue to focus on reliability to insure we continue to meet the requirements of our permit.

Effluent Appearance

Effluent Appearance was rated "unsatisfactory" during the inspection because the final effluent at outfall 001 was alleged to be turbid. At the time of inspection, turbidities were at their highest value for the day although they are within our normal operating ranges for the plant. In addition, we were well within our permitted TSS and believe the plant was neither experiencing excessive foaming nor floating and settable solids. This is in accord with our permit which provides that the discharge shall be free of substances that are in amounts sufficient to be unsightly or deleterious or which produce color, odor or other conditions apart from what are normally produced by a properly functioning WWTP Receiving water appearance was rated "unsatisfactory" during the inspection because Lake Michigan, in the vicinity of outfall 001 was noted to be brown in color.

It is recognized in our current permit that there may be some color associated with a properly functioning waste water treatment plant. At the time of the inspection the WWTP was operating properly and all parameters were well within compliance. Please find attached a study that was provided to your office on November 27, 2000 that was conducted to asses the color of the effluents of outfall 001 and outfall 002.

The conclusions from this study can be found on page two of the report. Consequently, this situation would not have created an unsightly, deleterious or nuisance condition prohibited by 327 I.A.C. 2-1.5-8.

Since the time of this study we have upgraded 5 of our 8 final filters with improved filter media and repairs were made to the trident underflows. The last 3 filters are scheduled for inspection in 2005.

The visual study of the effluent from Outfall 001 showed that there is a color contrast in comparing Outfall 001 to the lake, which can vary with sunlight and the angle from which the outfall is visually observed. The study found that the colors of the effluents from both outfall 001 and 002 are consist with the NPDES permit, the color of the effluent compared to the Lake can be impacted by natural conditions such as meteorological conditions, lake levels, mixing effects and the refractive properties of light.

BP understands that the color of the effluents are an issue for IDEM. It is agreed that from an aesthetic perspective it is appropriate to minimize the color contrast at the outfalls to the extent practicable and reasonable as identified in the color study dated November 27, 2000 that was requested by your office March 8, 2000.

In addition BP demonstrated in its NPDES permit renewal application submitted to IDEM in August 1994, that a multiport diffuser would provide more rapid and immediate mixing of the effluent into the lake. Based on the proposed location of the diffuser and the impact on the mixing, a diffuser would lesson the visible contrast of the effluent from outfall 001 compared to the lake.

We will contact your office during the first week of November to identify any outstanding issues you may have concerning this letter of response. In the interim, please contact Richard Harris of my staff for any additional information at (219) 473-3321.

Sincerely,

Linda Wilson

Linda J. Wilson
Environmental Superintendent

cc. File

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
We make Indiana a cleaner, healthier place to live.

Frank O'Bannon
Governor

Lori F. Kaplan
Commissioner

100 North Senate Avenue
P.O. Box 6015
Indianapolis, Indiana 46206-6015
(317) 232-8603
(800) 451-6027
www.in.gov/idem

February 10, 2003

Karleen James
Environmental Superintendent, HSE
BP Products North America, Inc.
Whiting Business Unit
2815 Indianapolis Blvd.
P.O. Box 710
Whiting, Indiana 46394-0710

Dear Ms. James:

Re: January 27, 2003 Exceedence Report
Amoco Whiting Unit
NPDES Permit No. IN0000108
Lake Co.

I am in receipt of your report concerning the exceedence of your facility's Total Suspended Solids (TSS) limit. Although the report is timely, I am concerned about the degree of the exceedence. The discharge of 35,420 lbs. vs a limit of 5,694 lbs., was more than six times the allowable limit. I wonder why the increase in oil recoveries and solids loadings wasn't foreseen and more effectively managed. Consequently, I request an explanation of the excess loadings and the problems with holding them until they could be properly treated. Please reply within twenty (20) days from the date of this letter.

If you have any questions, you may call me at (317) 232-8630, or write to me at the above address.

Sincerely,

Greg Glover
Sr. Environmental Mgr.
Compliance Evaluation Section
Office of Water Quality

bp

Whiting Business Unit
2815 Indianapolis Blvd.
PO Box 710
Whiting, IN 46394-0710

CERTIFIED MAIL - 7001 2510 0003 4376 5009
RETURN RECEIPT REQUESTED

January 27, 2003

Mr. Greg Glover
Indiana Department of Environmental Management
Office of Water Management
100 North Senate
Indianapolis, IN 46206-6015

RE: NPDES Permit No. IN 0000108
Exceedance of Daily Maximum Limit for Total Suspended Solids at Outfall 001

Dear Mr. Glover:

This letter serves as a follow-up to our notifications on January 21, 23 and 24, 2003 concerning operational issues at our wastewater treatment plant that were affecting our effluent to Lake Michigan.

IDEM was notified on January 21, 2003 at approximately 9:50 am when a visible sheen and some foaming were seen at Outfall 001 (IDEM Incident No. 3003-01-116). The initial analysis results of the January 21 composite sample were received at approximately 2:00 pm on January 22, 2003. Follow-up results the following morning confirmed that the total discharge loading from Outfall 001 was 35,420 pounds of total suspended solids (TSS). Our daily maximum allowable TSS is 5,694 pounds. This notification was made to IDEM at 11:30 am on January 23, 2003.

On January 24,2003, an additional notification was made concerning composite sample results that were collected for January 22,2003. TSS results indicated an exceedance for the daily maximum TSS limit. Calculations identified total discharge loading from Outfall 001 to be 7,756 pounds of TSS. This notification was made to IDEM at 8:40 am on January 24, 2003.

The sample results for composite sample collected on January 23, 2003 were well within the permit limits.

The permit exceedance was caused by an increase in oil recoveries and solids loading from the refinery operations into the pre-treatment system over the period from January 17 through January 19. When high turbidities were noticed, operators followed established procedures to reduce the impact as much as possible. The plant instituted the watershed plan and reduced flows to the plant to reduce stress. The final filters were backwashed, water from the refinery was impounded and more biological media was added to the activated sludge treatment system. While this helped reduce the severity of the situation, some biological material overflowed from the clarifiers and passed through the filters into Lake Michigan.

The watershed program is still in place and we will continue to limit flows as much as possible to allow the treatment plant to recover. Turbities are back in line and will be monitored closely until the treatment plant is back to normal operations.

If you need any further information concerning this incident, please contact Mr. Richard Harris at 219-473-3321.

Sincerely,

Karleen James

Ms. Karleen James
Environmental Superintendent, HSE

bp

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Whiting Business Unit
2815 Indianapolis Blvd.
PO Box 710
Whiting, IN 46394-0710

November 27, 2002

Mr. Greg Glover
Indiana Department of Environmental Management
Office of Water Management
100 North Senate
Indianapolis, IN 46206-6015

RE: NPDES Permit No. IN 0000108
Exceedance of Daily Maximum Limit for Total Suspended Solids at Outfall 001

Dear Mr. Glover:

This letter serves as a follow-up to our initial phone notification on November 22, 2002, concerning the exceedance of the daily maximum limit for total suspended solids (TSS) at Outfall 001 on November 20, 2002. We became aware of the non-compliance at approximately 2:30 pm (CST) on November 21, 2002 when the initial composite sample analysis was completed. The initial analysis of the November 20 composite sample was 120 mg/l TSS. The discharge loading from Outfall 001 was calculated at 7,506 pounds of TSS. Our daily maximum allowable TSS is 5,694 pounds. We were back in compliance with the TSS discharge loading the next day.

As a precautionary measure BP continued its water shedding program, reduced the outfall flows, and called for a third party analysis of our findings. An investigation is currently underway to identify the cause of the exceedance.

Sincerely,

for Ms. Karleen James
Environmental Superintendent, HSE

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
We make Indiana a cleaner, healthier place to live.

Governor

Lori F. Kaplan
Commissioner

100 North Senate Avenue
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www.state.in.us/idem

March 10, 2003

Karleen James
Environmental Superintendent, HSE
BP Products North America, Inc.
Whiting Business Unit
2815 Indianapolis Blvd.
P.O. Box 710
Whiting, Indiana 46394-0710

Re: February 28, 2003 Letter
BP (Amoco) Whiting Unit – Lake Co.
NPDES Permit No. IN0000108

Dear Ms.James:

I have received your response to the above-mentioned letter. The response is adequate. This agency looks forward to your continued compliance, and if you have any questions, you may call me at (317) 232-8630, or write to me at the above address.

Sincerely,

Greg Glover
Senior Environmental Manager
Compliance Evaluation Section
Office of Water Quality

bp

Whiting Business Unit
2815 Indianapolis Blvd.
PO Box 710
Whiting, IN 46394-0710

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

February 28, 2003

Greg Glover
Sr. Environmental Manager
Indiana Department of Environmental Management
Compliance Evaluation Section
Office of Water Quality
P.O. Box 6015
100 North Senate Avenue
Indianapolis, IN 46206-6015

RE: NPDES Permit No. IN 0000108
Exceedance of Daily Maximum Limit for Total Suspended Solids at Outfall 001

Dear Mr. Glover:

This letter is a follow-up to your correspondence dated February 10, 2003 requesting an explanation of the excess loadings that occurred on January 21 and January 22, 2003 at our wastewater treatment facility and our phone conversation on February 27, 2003.

On January 21 and January 22, 2003, the Whiting Refinery Waste Water Treatment facility exceeded the NPDES total suspended solids (TSS) permit limits. On January 21, 35,240 pounds of total suspended solids were released through Outfall 001. On the January 22, the calculated amount was 7,756 pounds of solids. Our permit limit for TSS is 5,694 lbs.

Per your request, events leading up to the exceedence are summarized below.

PLANT HEALTH PRIOR TO THE EVENT

In the ten days prior to the event, the waste water facility had impounded water on three separate occasions. These impoundment episodes were due to high turbidities caused by several process upsets in the refinery. The most significant event was caused by the plugging of a filter on the pump feeding de-emulsifier to a process unit. This lack of de-emulsifier allowed an oil/water/solids emulsion to enter the sewer and be transported to the waste water facility, where it was impounded. The surge capacity at the wastewater treatment plant consists of two tanks of ten million gallons each, the feed surge tank and the storm water surge tank. During normal operation, the feed surge tank is maintained at approximately 65% level to moderate any contaminant spikes that may enter the system. The impounding events that occurred prior to the upset had placed over four million gallons into the storm water surge tank. The waste water facility had been able to process about one million gallons from that tank. However, about three million gallons remained in the storm water surge tank on the evening of January 18, 2003.

The air floatation unit (AFU) was operating at the time about 67% capacity with two out of the six total process boxes shutdown for repair. At the time of the upset, the flow rate through the waste water treatment plant was 16.9 MM gallons per day or about 65% of design capacity. One of the

AFU boxes was out of service for reliability improvements. Another box had failed in late December and was waiting for repair parts to arrive.

The final filters were operating at the time of the event at 75% of capacity with two out of eight filters out of service for mechanical repair.

UPSET EVENT

High inlet turbidities to the waste water facility from the refinery on the night of January 18 into the morning of January 19 caused the total impoundment of water into the storm water surge tank. The weather had been unusually cold, which can lead to instrumentation difficulties on the processing units. These instrumentation failures make it difficult to monitor process conditions at some of the processing units. During this period, feed was going directly to the AFU from the feed surge tank. While the storm water surge tank was filled to the maximum level, the feed surge tank was pulled down to a fairly low level. When the total surge volume was filled to maximum capacity, flow was returned to feed surge tank.

High turbidities were noted at the outlet of the AFU toward the end of the impoundment. This put substantially higher loading of solids and oil and grease directly into the activated sludge plant (ASP) creating substantial additional feed that enhanced young bacterial growth.

The young bacterial growth created a condition where the fine material coming from the clarifiers could not be filtered out. By 1/21/03, turbidities at Outfall 001 climbed steadily, resulting in foaming and biological material passing through the plant and out into Lake Michigan along with a very small sheen of oil. This condition was immediately reported to IDEM and the National Response Center on the morning of 1/21/03.

By late on 1/21/03, Outfall 001 turbidities were falling and the plant was stabilizing. However, Outfall 001 turbidities remained elevated through 1/22/03, although at a much reduced level.

Some of the actions that were taken to reduce total water flow at this time included recycling water back into the refinery, ceasing all draining in the refinery without permission from the waste water facility and impounding 5.5 million gallons into the storm water surge tank. On the night of January 20, bioaugmentation was started in the activated sludge plant with bacteria specially developed to handle high oil and grease conditions in the activated sludge plant. This bioaugmentation is scheduled to continue for several months to ensure reliable operation during the recovery period for the waste water facility.

FOLLOW-UP SINCE THE EVENT

1. A root cause failure analysis (RCFA) of the entire event was immediately started and has been completed. Recommendations from the investigation are currently being implemented. While many of these recommendations center around communications within the refinery and

procedures, a new position is also being created. This new position, the Single Point of Greg Accountability (SPA) for improving environmental performance at the waste water facility, will look at technology and mechanical improvements that can be made at both the waste water facility and upstream units.

2. Repairs on the AFU have continued and currently five out of the six process boxes are fully in service restoring additional AFU capacity. The sixth box is currently undergoing maintenance to enhance reliability and is expected to be in service prior to March 1, 2003.

3. Several units that were identified as potential sources of the high inlet turbidities are currently undergoing scheduled shutdowns, which includes cleaning and maintenance operations that should improve process reliability.

4. It is also thought that the low levels in the feed surge tank may have contributed to the event. Since the event, the tank has been infrared scanned and also sampled at multiple levels to determine if solids or oil that may have built up within the tank. The low levels during impounding may have created a situation where solids and oil were scoured out of the tank and aggravated the conditions at the AFU. More work is ongoing with assessing this possibility and how to address this issue.

5. The priority of an ongoing investigation of the reliability of the design of the final filters has been raised. This investigation is yielding recommendations that are currently being implemented.

If you need further information concerning this incident, please call me at 219-473-3287.

Sincerely,

Karleen K. James
Environmental Superintendent
Health, Safety and Environmental

bp

Whiting Business Unit

BP Amoco Corporation
2815 Indianapolis Boulevard
P.O. Box 710
Whiting, IN 43694-0710

CERTIFIED MAIL - 7099 3400 0017 0018 2972
RETURN RECEIPT REQUESTED

November 27, 2000

Mr. Michael Kuss
Indiana Department of Environmental Management
504 N. Broadway
Suite 418
Gary, Indiana 46402-1921

Re: BP Amoco Whiting Refinery NPDES Permit No. IN 0000108
Outfalls 001 and 002 Color Study Report - November 27, 2000

Dear Mr. Kuss,

Enclosed is the report of the study that the BP Amoco Whiting Refinery conducted on the color of the effluents from Outfall 001 and Outfall 002. This report addresses the Indiana Department of Environmental Management's concerns and the requests the Department made in the letter sent to BP Amoco dated March 8, 2000 from Assistant Commissioner Mr. Mathew Rueff.

If you have any questions regarding the report, please contact Natalie R. Grimmer at (219) 473-5417.

Sincerely,

Stephen D. Simko
Environmental Superintendent
Environmental, Health and Safety

Enclosure

cc: Ms. Hala Silvey, IDEM
Mr. Gary Starks, IDEM

BP Amoco Whiting Refinery NPDES Permit No. IN 0000108
Outfalls 001 and 002 Color Study Report - November 27, 2000

Executive Summary

As requested by the Indiana Department of Environmental Management (IDEM) , the BP Amoco Whiting Refinery conducted a study to assess the color of the effluents from Outfall 001 (treated wastewater) and Outfall 002 (once through non-contact cooling water). The study found that the colors of the effluents from Outfall 001 and Outfall 002 are consistent with the NPDES permit, the color of Outfall 001 is typical for the effluent from a biological wastewater treatment system, and the contrast of the color of the effluents from Outfall 001 and Outfall 002 compared to the Lake can be impacted by natural conditions such as meteorological conditions, lake levels, mixing effects and the refractive properties of light.

BP Amoco understands that the color of the effluents from Outfall 001 and Outfall 002 is an issue for IDEM. It is agreed that from an aesthetic perspective it is appropriate to minimize the color contrast of these outfalls in comparison to the Lake to the extent practicable and reasonable.

For example, even though the color study did not indicate that the refinery's final filter system has an impact on the color contrast of Outfall 001 in comparison to the Lake, BP Amoco is willing to take extra steps to further the final filter study. The initial study did identify some opportunities to improve the effectiveness of this system.

The major planned activity, however, is BP Amoco's proposal to install a diffuser some distance from the Lake Michigan shoreline. In BP Amoco's NPDES Permit Renewal Application submitted to IDEM in August 1994, we propose to install a multiport diffuser on the effluent from Outfall 001 that would provide more rapid and immediate mixing of the effluent into the Lake. Based on the proposed location of the diffuser and its impact on the mixing, a diffuser would lessen the visible contrast of the effluent from Outfall 001 in comparison to the Lake. Lessening the visible contrast of Outfall 001 would also minimize the contrast of the color of Outfall 002, since it is located near Outfall 001.

BP Amoco has recently approached IDEM's staff regarding moving forward towards renewing the refinery's NPDES permit which expired in May 1994. It is important for a number of reasons that this take place. One aspect is addressing the color issue that is the subject of this report.

Introduction

On September 17, 1999 an IDEM representative conducted an inspection at the BP Amoco Whiting Refinery's Wastewater Treatment Plant to view the visual quality of Wastewater Treatment Plant Effluent Outfalls 001 and 002 which discharge to Lake Michigan. The inspector observed and noted that the effluent from Outfall 001 was brown in color and that the effluent from Outfall 002 was grey/white in color. In the inspection report, the effluent and receiving waters were evaluated as "marginal" compliance.

In response to the inspection report dated September 17, 1999, BP Amoco submitted a letter to IDEM (Mr. Michael Kuss) dated November 10, 1999 stating that BP Amoco disagreed with the characterization made of Outfall 001 and 002. BP Amoco provided data for Outfall 001 and 002 which substantiated that both Outfalls were well within permit limits at the time of the inspection. Additionally, possible reasons were suggested for the visual effects of the outfalls which included lake levels, meteorological conditions, mixing effects and refractive properties of light.

On March 8, 2000 BP Amoco received a letter from IDEM Assistant Commissioner Mr. Mathew Rueff which expressed a concern with the appearance of the BP Amoco Whiting Refinery's wastewater treatment plant outfalls. The letter requested that BP Amoco study the cause of the "discoloration" of the effluent from Outfall 001 and Outfall 002 and identify, evaluate, and propose corrective measures to eliminate the discoloration.

Upon receipt of the letter dated March 8, 2000, BP Amoco submitted a letter to IDEM's Mr. Michael Kuss on March 22, 2000 requesting a meeting to discuss IDEM's view on the issue in an effort to work cooperatively towards developing a plan to address IDEM's concerns. BP Amoco representatives subsequently met with IDEM's Mr. Michael Kuss and Ms. Hala Silvey on April 6, 2000 to discuss the basis of the concern expressed in the March 8, 2000 letter. In the meeting BP Amoco expressed the view that the issue of the color of the outfalls was not a violation of our permit, but that the Refinery was willing to address the Agency's concerns and agreed to provide IDEM with an outline of a plan to study the color of the two outfalls. On June 14, 2000 BP Amoco submitted the outline of the outfall color study plan to IDEM's Mr. Michael Kuss.

The results of the outfall color study are presented in the following sections.

Conclusions

Outfall 001-- Treated Wastewater

- The visual study of the effluent from Outfall 001 showed that there is a color contrast in comparing Outfall 001 to the Lake, which can vary with sunlight and the angle from which the outfall is visually observed.

- The benchmarking study indicated that this contrast is observable even at very low total suspended solids (TSS) and oil and grease (O&G) concentrations, and that this contrast is typical for the effluent from a biological wastewater treatment system.

- The wastewater treatment final filter system study identified opportunities that could improve the effectiveness of the design and operation of the system.

- The initial results of the study to assess the impact of the fluid bed incinerator scrubber water on the effluent indicate that there is not a significant impact to the effluent from the scrubber water.

- BP Amoco demonstrated in its NPDES Permit renewal Application submitted to IDEM in August 1994 that a multiport diffuser would provide more rapid and immediate mixing of the effluent into the Lake. Based on the proposed location of the diffuser and its impact on the mixing, a diffuser would lessen the visible contrast of the effluent from Outfall 001 compared to the Lake.

Outfall 002—Once Through Non-Contact Cooling Water

- The visual study of the effluent from Outfall 002 showed that there is a whitish color contrast in comparing Outfall 002 to the Lake, which can vary with sunlight and the angle from which the outfall is visually observed.

- The low lake levels and rock formations present at the location of Outfall 002 have a direct impact on the visual quality of Outfall 002. As the outfall hits the rocks, rapid turbulent mixing occurs which forms air bubbles and gives the outfall a whitish appearance.

- The one parameter identified that could potentially impact the color of Outfall 002 is O&G. However, this parameter was measured at low levels well below permit limits when the whitish appearance of Outfall 002 was observed.

- There have been no additional factors identified that would impact the color of Outfall 002.

Discussion

I. Wastewater Treatment Plant Effluent (Outfall 001) Study Plan Element

A. Visual Color
Study of the Effluent from Outfall 001.

Photographs were taken of the effluent from Outfall 001 at a fixed location (eastern fence line of the wastewater treatment plant looking down onto the outfall) on September 6, September 19, September 29, and October 6, 2000 at around 2PM CT each day using a

digital camera. A copy of these photographs are attached (see Figures 1, 2, 3, 4). Upon review of these photographs, one can see the effluent plume from Outfall 001 by the color contrast against the Lake in each photograph.

A historical photograph was found that was taken by a 35 mm camera from about the same fixed location at the fence line but at a higher elevation. Figure 5 depicts a photograph taken of Outfall 001 on April 21, 1994. The same color contrast can be seen on this photo as with the photos that were recently taken as shown in Figures 1, 2, 3, and 4. An additional photograph was found, believed to be taken in 1991, of Outfall 001 from a boat looking at angle southeast of the outfall, show in figure 6. The effluent plume can also be seen in this photograph as a contrast against the Lake.

The sunlight will also have an effect upon the observed color of the effluent from the Outfall and the Lake. Depending upon the amount of sunlight present and the angle from which the photograph is taken, the color of the effluent and the Lake can vary. This is evident from the slight variations in color seen of Outfall 001 and the Lake in the photographs taken from the different fixed locations on the different days.

B. Benchmarking Study of the "Normal" Color of Effluent from a Biological Wastewater Treatment Plant

Total suspended solids (TSS) and oil and grease (O&G) are parameters that potentially could have an impact on the visual quality of an effluent. The concentration of these parameters in the effluent on the days in which the photographs in Figures 1, 2, 3, and 4 were taken are documented in Table 1. As evident from the table, these parameters were within effluent permit limits on the day the photographs were taken.

The effluent TSS and O&G for Outfall 001 were also within permit limits on April 21, 1994 when the photograph in Figure 5 was taken. Outfall 001 TSS and O&G concentrations for April 18 - April 21, 1994 are listed in Table 2. The TSS of Outfall 001 was 7 ppm the three days prior to and 6 ppm the day the photograph was taken. At this very low TSS concentration and O&G, a contrast of the color of the outfall can still be seen in comparison to the Lake in the photograph.

For BP Amoco's NPDES permit application submitted in 1994, a color analysis was run on the effluent from Outfall 001. The result for Outfall 001 was <5 color units. The typical value of color units from a biological activated sludge plant ranges from <5 to 100. A review of other industry permit applications indicates that color units can run as high as 500 color units on effluents from biological wastewater treatment plants. The BP Amoco Refinery's results were 100x less than this maximum value identified.

These above results support the conclusion that a "normal" effluent from a biological wastewater treatment system will potentially have a contrasting color in comparison to the receiving body of water.

C. Evaluation of the BP Amoco Refinery's Wastewater Treatment Plant's Final Filter System

The BP Amoco Whiting Refinery developed a plan to study the effectiveness of the design and the operation of the wastewater treatment plant's final filter system. The final filter system can have an impact on effluent TSS. The plan consisted of collecting inlet and outlet turbidity data, internal physical inspections and repair, and assessing the cause of any issues identified.

A series of turbidity comparison tests were run. The inlet and outlet turbidities on each of the eight final filters were measured. Initial testing was performed under abnormally low flow conditions, and on two of the filters (203 and 204) the outlet turbidity was much closer to that of the inlet turbidity. When the filters were tested under normal flow conditions, the outlet turbidities on all the filters were lower than the inlets.

For the second phase of the filter study, a plan was initiated to take the filters out of service for inspection of internal components and filter media quality. An internal inspection conducted on Filter 203 identified that the filter had media loss. The media in the filter is to be replaced. As scheduling allows, plans are in progress to inspect the other filters.

The media loss in Filter 203 was evaluated. It was determined that the media loss was most likely due to issues with the backwash control procedures. In order to prevent potential media loss in the future, the filter backwash procedure is being reviewed and revised as appropriate. Additionally, the backwash control system is being analyzed. Any changes to the backwash procedures will be reviewed with the Lakefront operators and placed in the Lakefront Training Manual.

D. Impact of Fluid Bed Incinerator Scrubber Water as a Component of the Effluent

The scrubber water from the refinery's fluid bed incinerator is routed directly to the wastewater treatment plant's interceptor box in which it mixes with the effluent from the wastewater treatment plant and the resultant flow is then discharged into the Lake via Outfall 001 under the refinery's NDPES permit. Because the scrubber water mixes directly with the wastewater treatment plant effluent, it can potentially have an impact on the visual quality of Outfall 001. Our study plan was to include a visual comparison of the effluent from Outfall 001 when the incinerator is running and when it is shutdown.

The BP Amoco Whiting Refinery's fluid bed incinerator was in operation during the entire outfall color study timeframe; therefore, the photographs of the effluent from Outfall 001 depicted in Figures 1, 2, 3, and 4 are when the incinerator scrubber water was mixed with the wastewater treatment plant effluent.

However, based on solids content, the impact of the incinerator scrubber water to the effluent from Outfall 001 should be insignificant. The turbidity of the incinerator scrubber water is measured by the wastewater treatment plant operators and the results are typically at <20 ppm. The ratio of TSS to turbidity averages around 1.2 to 1.0. Therefore, the average TSS of the srcubber water would be approximately <24 ppm. At a flow of 0.56 mmgals/day of scrubber water and an average Outfall 001 effluent flow of 18.5 mmgals/day (based on September 2000 data), the contribution of solids to Outfall 001 from the scrubber water would be minimal.

E. Impact of the Proposed Diffuser on Effluent Color

The BP Amoco Whiting Refinery submitted a NPDES Permit Renewal Application to IDEM in August 1994. A part of the permit renewal application (Volume II Mixing Zone Demonstration) included the refinery's proposal to install a mutiport diffuser for the discharge of the treated effluent from Outfall 001. BP Amoco believes and has demonstrated by modeling that a mutiport diffuser provides more rapid and immediate mixing than is provided by the existing outfall.

Specific benefits of a multiport diffuser as outlined in the refinery's permit renewal application include:

- The diffuser, by design, provides even more rapid and immediate mixing in a small area.
- The diffuser would be located offshore, thereby minimizing plume contact with the Lake Michigan shoreline.
- The diffuser site would be exposed to the general nearshore current/circulation patterns that enhance local mixing.
- The discharge would be present in deeper waters completely submerged and surrounded by lake water available for entrainment (induced mixing). Vertical mixing throughout the water column would be achieved as the positively buoyant plume rises toward the surface.

Based on the proposed location of the diffuser and its impact on the effluent discharge into the Lake, the diffuser would lessen the visible contrast of the effluent from Outfall 0001 compared to the Lake.

II. Once Through Non-Contact Cooling Water (Outfall 002) Study Plan Element

A. Visual Color Study of the Effluent from Outfall 002

Photographs were taken of Outfall 002 from a fixed location (at the eastern fence line of the wastewater treatment plant looking down onto the outfall) on September 6, September 19, September 29, and October 6 at around 2PM CT each day. These photographs are attached (see Figures 7, 8, 9, and 10). Upon review of these photographs, the effluent plume appears whitish in contrast against the Lake. As also can be seen, this color variation is about the same in each photograph. As discussed for Outfall 001, the sunlight and the angle from which the photographs are taken can have an effect upon the observed color of the effluent and the Lake.

B. Evaluation of Background Lake Conditions to Assess their Impact on the Color of Outfall 002

It is evident that the low lake levels and rock formations are having a direct impact on the visual quality of Outfall 002. The air bubbles forming from Outfall 002 hitting the rocks, which are causing rapid like turbulent mixing, can clearly be seen by a visual look at the outfall. These air bubbles can give a whitish appearance to this outfall. The amount of rocks present at the location of Outfall 002 can be seen in the photographs in Figures 7, 8, 9 and 10. When the level of the lake is lower, the impact from the rocks is more severe. In the last 24 months the average Lake Michigan water level has stayed below 580 feet. The water level was above 580 feet in the 33 months prior, with elevations as high as 582.8 feet.

C. Identification of Factors that Potentially Affect the Color of the Outfall

The one parameter that could have a potential impact on the visual quality of this effluent is O&G. The outlet O&G results for Outfall 002 during the month of September 2000 in which the photographs were taken ranged from <0.3 - 0.5 ppm. The delta (outlet - inlet) O&G results were from <0.3 - 0.1 ppm for the same month. The delta O&G permit limit is 5 ppm. Therefore, the O&G results for Outfall 002 were essentially the same as the Lake's background levels and well below permit limits.

No additional factors were identified during the study that could impact the visual quality of the effluent from Outfall 002.

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
We make Indiana a cleaner, healthier place to live.

Joseph E. Kernan
Governor

Lori F. Kaplan
Commissioner

Northwest Regional Office
8315 Virginia Street, Suite 1
Merrillville, Indiana 46410-9201
(219) 757-0265
(888) 209-8892 Toll Free
(219) 757-0267 Fax
www.IN.gov/idem

September 23, 2004

VIA CERTIFIED MAIL 7002 0510 0004 0439 9013

Mr. Dennis J. Seith, Business Unit Leader
Whiting Business Unit
BP Products North America, Inc.
2815 Indianapolis Boulevard
Whiting, IN 46394-0710

Re: Inspection Summary/Violation Letter
Whiting Business Unit
BP Products North America, Inc.
NPDES Permit No. IN0000108
Whiting, Lake County.

Dear Mr. Seith:

On June 2, 2004, a representative of the Indiana Department of Environmental Management, Northwest Regional Office, conducted the on-site portions of a Reconnaissance Inspection of BP Products North America, Inc., Whiting Business Unit, Whiting, Indiana. This inspection was conducted pursuant to NPDES Permit No. IN0000108 and IC 13-14-2-2. For your information, and in accordance with IC 13-14-5, a summary of the inspection is provided below:

Type of Inspection:	_X_	Reconnaissance Inspection
Results of Inspection:	___	Violations were observed but corrected during the inspection.
	_X_	Violations were observed.
	___	Violations were observed and will be referred to the Office of Enforcement.

The following violations and concerns were noted during this inspection:

1. Receiving Waters Appearance – Receiving Waters Appearance was rated unsatisfactory because Lake Michigan, in the vicinity of outfall 001 was brown in color, attributable to the discharge from outfall 001. This is a violation of 327 IAC 2-1.5-8.

2. Effluent Appearance - Effluent Appearance was rated unsatisfactory because the final effluent at outfall 001 was turbid during the on-site portion of this inspection conducted on June 2, 2004, in violation of Part I. A. 1. b. and c. of the NPDES Permit.

3. Effluent Limit Violations – BP Products North America, Inc., Whiting Business Unit reported four (4) NPDES Permit numeric effluent limitation violations, of the limitations contained in Part I. A. 1 of the NPDES Permit, during 2002 and 2003. BP Products reported one such violation in 2002, and three (3) such violations in 2003. Each violation was for the parameter of TSS (see the enclosed Verification of Inspection and its attachments for more information regarding these violations).

Due to a problem with the certified operator tracking data base at IDEM, the certified operator for this facility, Mr. David Olen, was inadvertently cited as having his certification expired, at the time of the inspection. Enclosed is a revised verification of inspection report, which deletes the violations for Records and Reports and for Operations, because of the violation (certified operator expiration) being cited.

Within thirty (30) days of receipt of this letter, a written detailed explanation, documenting compliance with each of the requirements listed above, must be submitted to this office. Failure to respond adequately to this Violation Letter may result in a referral to IDEM's Office of Enforcement. Please direct any response to this letter and any questions to Michael Kuss at (219) 757-0265. Thank you for your attention to this matter.

Sincerely,

Rick Roudebush

Rick Roudebush, Inspections Section Chief
Compliance Branch
Office of Water Quality

Enclosure

cc: Richard Harris, Environmental Engineer
Rose Herrera, Environmental Engineer
David J. Olen, Wastewater Treatment Plant Supervisor
Linda J. Wilson, Superintendent, Environmental
Lake County Health Department

REVISED

NPDES FACILITY VERIFICATION OF INSPECTION

State Form 47989(R3/12-02)
INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

Revised 9/20/04-RR

Facility and Inspection Information

DES Permit #: IN 0000108

Facility Type Code: ☐ 1 = Municipality ☒ 2 = Industry/Semi-Public ☐ 3 = Agricultural ☐ 4 = State/Federal
☒ Major ☐ Minor

is is to verify that on 6-2-04 (MM/DD/YY) an inspection of the specified facility was conducted by the undersigned presentative of the Indiana Department of Environmental Management, Office of Water Quality.

PE OF INSPECTION:

__ Compliance Evaluation Inspection (C)
X Reconnaissance Inspection (R)
__ Industrial User Inspection (I)
__ Sanitary Sewer Overflow (V)
___ Multimedia Screening Evaluation (M)
___ Combined Sewer Overflow Inspection (Y)
___ Compliance Sampling Inspection (S)
___ Other _____

ame and Location of Facility Inspected: BP Products North America Inc. 2815 Indianapolis Blvd Lake Co. own/City: Whiting, IN County: 46394-0710		Receiving Waters/POTW: Lake Michigan IHSC - Lake George Branch	Permit Expiration Date: 2-28-95
ame(s) of On-Site Representatives: Richard Harris Rose Herrera David J. Olen Linda J. Wilson		Title(s): Environmental Engr Environmental Engr WWTP Supervisor Supt. Environmental	Phone: (219) 473-3321 Fax: (219) 473-5379 Phone: (219) 473-5298 Fax: ( )
rtified Operator: David J. Olen Not certified	Number: 14118	Class: D (see comments (4)+(5) below)	☒ Full Time ☐ Part Time
	Renewal Effective Date: None	Expiration Date: 6-30-02	Hours per Week: 40 +
ame and Address of Responsible Official: Dennis J. Seith		Title: Business Unit Leader	Phone: (219) 473-3179 Fax: (219) 473-3504
		Contacted: ☐ Yes ☒ No	Facility Design Flow: 001-17M6D 002 120M6D

Areas Evaluated During Inspection

(S = Satisfactory, M = Marginal, U = Unsatisfactory, N = Not Evaluated, NA = Not Applicable)

S	Receiving Waters Appearance (1)	N	Facility/Site	N	Self-Monitoring Program	N	Compliance Schedules
S	Effluent Appearance (2)	U	Operation (5)	N	Flow Measurement	N	Pretreatment
S	Permit	N	Maintenance	N	Laboratory	S	Effluent Limits Violations 2004
NA	CSO/SSO (Sewer Overflow)	N	Sludge Disposal	U	Records/Reports (4) (3)	U	Other: Effl. Limit Viol. 2002+20

Preliminary Inspection/Screening Findings*

*These findings are considered preliminary and include specific matters discovered during the inspection that the designated agent of the department believes may be a violation of law or a permit issued by the department.

ingle Media Inspection:

___ No violations were discovered with respect to the particular items observed during the inspection. (5)
___ Potential violations were discovered but corrected during the inspection. (4)
X Potential violations were discovered and require a submittal and/or follow-up inspection. (2)
___ Potential violations were observed and may be referred to our Office of Enforcement. (1)
X Additional information/review is required to evaluate overall compliance.
___ Other _____. (3)

omments Regarding Marginal and Unsatisfactory Ratings – Including Rule or Permit Citation(s):

(1) The Lake George Branch of the IHSC had a visible oil sheen near outfall 004, but outfall 004 was clear with no visible sheen at the time of this inspection. The oil sheen observed on the IHSC is in violation of 327 IAC 2-1.5-8.

Lake Michigan was brown in color in the vacinity of outfall 001. The brown color was attributable to outfall 001, and is a violation of 327 IAC 2-1.5-8.

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REVISED Revised 9/2004 RR

Additional Comments Regarding Marginal and Unsatisfactory Ratings – Including Rule or Permit Citation(s) :

2) Outfall 001 was turbid and brown in color and contained fine settleable floc material, in violation of PART I-A. 1. b and d of the NPDES permit.

3) BP reported three (3) NPDES permit numeric effluent limitation violations in 2003 and one (1) in 2002. Each violation was for TSS at outfall 001 (2 daily maximum TSS violation in JAN 03 and the Monthly Average violation in JAN 03 and one daily max in NOV 02)

Conclusions and Recommendations:

NONE

Multi-Media Screening (please note that a multi-media screening is not a comprehensive evaluation of the compliance status of the facility):

X Multi-Media Screening not conducted.

____ Potential problems or potential violations were discovered but corrected during the inspection.

____ Potential problems or potential violations were discovered and will be referred to the Office(s) of

_____ for further investigation and response.

Pollution Prevention

Pollution prevention is the preferred means of environmental protection in Indiana. The goal of pollution prevention is to promote changes in business and commercial operation, especially manufacturing processes, so that less environmental wastes are generated. Your participation in Indiana's pollution prevention program is entirely voluntary. Would your company like to be contacted by IDEM's Office of Pollution Prevention and Technical Assistance?

____ Yes X No

If you have any pollution prevention questions, you may contact our Office of Pollution Prevention and Technical Assistance at (317) 233-5627 or toll-free (800) 988-7901 or visit their Web site at *http://www.in.gov/idem/oppta* .

Summary and Correction Information

A summary of violations and concerns noted during the inspection were verbally communicated to the undersigned representative during the inspection. The facility should correct any deficiencies noted as soon as possible. Corrections made and verified during the inspection may still be cited as violations.

____ Written inspection summary will be provided within 45 days.

X Written report provided at the conclusion of the inspection. If upon subsequent review, any changes to this report are deemed necessary, a revised report will be sent to the subject facility within 45 days.

IDEM Representative:				
Printed Name	Signature	Phone Number	Date	Time
Michael Kuss	Michael Kuss	219 757-0265	6-2-04	In: 11:13A Out: 3:10P

Owner/Agent Representative/Title:				
Printed Name	Signature	Title	Phone Number	Date
RICHARD HARRIS	Richard A. Harris	ENVIRONMENTAL ENGINEER	219 473-3321	6-2-04

For IDEM Internal Use:		
Section Chief or Regional Deputy Director:	Date:	For:
8/31/04 Rick Rowdenbush	9/13/04	☐ Follow-up ☐ Enforcement ☐ NPDES Permits ☐ Other

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IDEM	NPDES Facility Inspection Report **Comments and/or Recommendations**	PAGE 3 OF 3

NPDES PERMIT #:	FACILITY:	CITY:	YR/MO/DAY:
IN0000108	BP North America	Whiting	04-06-02

in violation of the limitations contained in Part I.A.1 of the NPDES permit.

④ ~~David J. Olen has been signing the DMRs and MROs, but according to IDEM he is not duly certified, for the failure to aquire the needed amount of continuing education credits, as required by 327 IAC 5-22. See footnote 1, below.~~

⑤ ~~The wastewater treatment facilities are not under the direct supervision of an operator certified by the commissioner of the IDEM, in violation of Part II.A.10, of the NPDES permit. See comment # 4 above and footnote 1, below.~~

Both above violations deleted - Rich Ronda... 9/20/04

Footnote 1: Attached are letters and records provided by BP. BP believes that David Olen has completed the necessary continuing education training and should be properly certified.

Inspected by:	Received by:	Date:
Michael Kuss	[signature]	6-2-04

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